

WHAT IS CLAIMED:

1. A stent for repairing a bifurcated vessel, comprising:
a plurality of first interconnected rings aligned along a common longitudinal axis;
at least one second ring forming a trap door section for apposing the
5 opening to a side branch vessel;
the first rings and the at least one second ring having a first delivery diameter and a second implanted diameter; and
the at least one second ring having a substantially circular cross-section in the first delivery diameter and a substantially elliptical cross-section in the second
10 implanted diameter.
2. The stent of claim 1, wherein each of the first rings has between six and fifteen peaks.
3. The stent of claim 2, wherein each of the at least one second ring(s) has between seven and fifteen peaks.
4. The stent of claim 1, wherein the at least one second ring is an at least one distal end ring.
5. The stent of claim 4, wherein the first rings, the at least one second ring, and the at least one distal end ring are interconnected by links.

6. The stent of claim 5, wherein the links have any of a linear configuration, a curved configuration, or a combination of a linear and a curved configuration.

7. The stent of claim 1, wherein at least the first rings are associated with a drug coating.

8. A method for treating the proximal portion of a main vessel and the opening of a side branch vessel at a bifurcation, comprising:

providing a stent having a plurality of first rings and a plurality of second rings;

5 mounting the stent on a catheter having a long balloon and a short balloon;

advancing the catheter and stent through the vascular system to a position proximal of the bifurcation;

10 positioning the stent at the bifurcation so that the second rings are aligned with the opening to the side branch vessel;

inflating the long balloon and the short balloon to radially expand the stent so that the first rings are apposed to the main vessel proximal to the bifurcation and the second rings are apposed to the opening of the side branch vessel; and

15 deflating the long balloon and the short balloon and withdrawing the catheter from the vascular system.

9. The method of claim 8, wherein the second rings form a substantially elliptical cross-section when expanded to appose the opening to the side branch vessel.

10. The method of claim 8, wherein the stent is expanded in the main vessel so that substantially no portion of the stent is distal of the side branch vessel.

11. The method of claim 8, wherein the catheter includes a rapid exchange (RX) guide wire passageway for receiving an RX guide wire and an over-the-wire (OTW) guide wire passageway for receiving an OTW guide wire so that as the stent is positioned at the bifurcation, the catheter is slidably advancing over the RX guide
5 wire and the OTW guide wire.

12. The method of claim 11, wherein as the catheter is advanced through the vascular system, the catheter slides over the RX guide wire positioned in the main vessel while a distal end of the OTW is positioned within a blind lumen.

13. The method of claim 12, wherein after the catheter is positioned proximal to the bifurcation, the OTW guide wire is withdrawn from the blind lumen and advanced into the side branch vessel.

14. The method of claim 13, wherein after the OTW guide wire is advanced into the side branch vessel, the catheter is advanced distally over the RX guide wire and the OTW guide wire to position the stent at the bifurcation.